EXHIBIT 11

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8

9   **UNITED STATES DISTRICT COURT**

10   **NORTHERN DISTRICT OF CALIFORNIA**

11   **SAN FRANCISCO DIVISION**

12

13   GOOGLE LLC,   CASE NO. 3:20-cv-06754-WHA

14   **DR. KYRIAKAKIS' DECLARATION IN**
                         Plaintiff   **SUPPORT OF GOOGLE LLC'S OPENING**
15   **CLAIM CONSTRUCTION BRIEF**

16   v.

17   SONOS, INC.,

18   Defendant

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                                                 Case No. 3:20-cv-06754-WHA

I.   INTRODUCTION

1.   My name is Christos Kyriakakis. I am currently an Associate Professor of Electrical and Computer Engineering at the University of Southern California. I have been retained by Google, Inc. ("Google") to provide opinions regarding how a person of ordinary skill in the art at the time of the alleged invention, in or around 2011, reading the claims, specification, and file histories of U.S. Patent Nos. 9,967,615 ("the '615 patent") and 10,779,033 ("the '033 patent") would have interpreted certain claim language found within the asserted claims of these patents. I understand that my declaration may be submitted to the Court so that the Court may interpret the claim through a process referred to as "claim construction."

2.   For my work on this case, I am being compensated for my time at my typical consulting rate of $525 per hour. I am also being reimbursed for all incurred expenses. My compensation does not depend on the substance of my opinions or the outcome of any issues in this case. I have no other interests in this litigation or with any of the parties.

3.   My opinions are set forth below. I understand that Sonos may submit arguments in support of its proposed constructions and I reserve the right to supplement my opinions in response to those arguments.

4.   I have personal knowledge of the facts and opinions set forth in this declaration, and, if called upon to do so, I would testify competently thereto.

5.   In rendering my opinions, I have considered the '615 and '033 Patents, their file histories, and any other documents referenced, discussed, or listed in my declaration, and my own knowledge and experience in the fields such as wireless communications, and multimedia systems. I have also reviewed the productions associated with the claim construction disclosures in this case, including the extrinsic and intrinsic evidence cited by the parties in their "Patent Local Rule 4-2" disclosures.

6.   In forming my opinions, I understand that the claims should be interpreted as they would be understood by a person of ordinary skill in the art of the patents at the time the application was filed. I understand that the claims are to be construed with reference to the patent's specification, the claims, the prosecution history, in light of the plain meaning of the terms used in the claims, and

1   with reference to other sources of information, such as dictionaries, textbooks, and literature or other

2   patents in the same or related fields.

3   7.   My analysis of the materials produced in this matter is ongoing and I will continue

4   to review any new material as it is provided. This declaration represents only those opinions I have

5   formed to date. I reserve the right to amend or supplement my opinions based on additional

6   documents or evidence I am presented, including without limitation any arguments or expert

7   declarations advanced by Sonos in this case.

8   **II.   BACKGROUND & QUALIFICATIONS**

9   8.   In this section I have summarized my education, career history, publications, and

10   other relevant information. My curriculum vitae, which includes my qualifications as well as my

11   publications, is attached as Exhibit A.

12   **A.   Educational Background**

13   9.   I earned my Bachelor of Science degree in Engineering and Applied Science from

14   the California Institute of Technology (Caltech) in 1985. I received my Master of Science degree

15   in Electrical Engineering in 1987 and my Ph.D. in Electrical Engineering in 1993, both from USC.

16   My expertise is in audio and acoustic sciences. My research interests lie at the intersection of

17   acoustics, psychoacoustics (the science that studies human perception of sound), and audio signal

18   processing. My recent research has focused on the study of audio systems in challenging

19   environments including automobiles and mobile devices, as well as algorithms for enhancing the

20   performance of voice recognition engines. I have published several technical papers on acoustical

21   measurement and calibration methods that can be applied to listening rooms, movie theaters,

22   headphones, and automobiles, and developed novel signal processing algorithms for optimizing

23   sound system performance of speakers and headphones. Other topics I have researched include

24   multichannel audio streaming over high bandwidth networks, audio acquisition and rendering,

25   virtual microphones and virtual speakers, hybrid headphone loudspeaker rendering methods, and

26   advanced signal processing techniques for optimizing sound quality in automobiles.

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B.   Relevant Professional Experience

2   10.   I am the founding Director of the USC Immersive Audio Laboratory with facilities

3 for experimental work in room acoustics, multichannel audio, and psychoacoustics. This laboratory

4 also serves as a unique teaching facility for my undergraduate course in Introduction to Digital

5 Audio and my graduate course in Immersive Audio Signal Processing. Both courses have a major

6 acoustics component that examines the interaction of sound with the acoustical environment (home,

7 movie theater, car). The graduate course was developed through a two-year grant I received from

8 the National Science Foundation entitled "Collaborative Learning in Engineering Using Immersive

9 Environments," and was the first of its kind to assess the impact of audio immersion in student

10 learning. In addition to the courses I teach, I have also supervised and served on Ph.D. dissertation

11 committees for more than 30 students.

12   11.   From 2003-2018, I was also the founder and Chief Technology Officer of Audyssey

13 Laboratories, a USC spin-off company that develops and licenses audio technology to leading

14 automotive, professional and consumer electronic companies around the world including Jaguar,

15 Land Rover, Audi, Mercedes Benz, Volvo, IMAX, Denon and Intel. As part of my work at

16 Audyssey, I developed acoustical measurement methods for characterizing the performance of

17 headphones and earbuds. Using the system I designed, I led the effort to create a database of 500

18 headphone measurements from nearly 100 manufacturers. I also led the development of audio

19 algorithms and designed speakers with Bluetooth and WiFi playback capability. These speakers

20 were novel acoustical designs that used a combination of unique enclosures, and audio signal

21 processing to optimize their performance and overcome limitations that arise from small drivers

22 and enclosures. For example, we used signal processing technologies combined with novel

23 acoustical design to extend the bass response of small woofers and passive radiators beyond what

24 was previously possible in small speaker enclosures. The innovations in these designs have received

25 awards, including Popular Science's "Best of What's New."

26   12.   In April 2018, I was elected as Senior Member of the Institute of Electrical and

27 Electronic Engineers in recognition of my contributions to the field of engineering. I am also a

28 member of the Audio Engineering Society, the leading association for professionals in the audio

1   industry. I have published nearly 100 peer reviewed technical papers. I have published a book

2   entitled Immersive Audio Signal Processing, and hold several patents in acoustic measurement f

3   loudspeakers in rooms and cars, headphone optimization, loudspeaker crossover optimization, and

4   loudspeaker response correction using signal processing. My publications examine various aspects

5   of sound measurement, how sound interacts with the acoustical elements of the environment, novel

6   methods for surround sound recording and reproduction, and the perception of sound by human

7   listeners. In 2006, I received a World Technology Network Award. This organization presents

8   awards to innovators in several areas in which technology can foster a paradigm change. My award

9   was for innovations in immersive audio that enable new capabilities in media and journalism. Other

10   award recipients at that event included Vice President Al Gore, Google, and Space-X.

11   13.   In the late 1990s and early 2000s, I was a faculty researcher and later Deputy Director

12   of the National Science Foundation's engineering research center established at USC. I was studying

13   the fundamental and technological limitations of immersive audio and the role of acoustics on the

14   performance of loudspeakers and audio systems in homes and cars. In 2003, together with one of

15   my graduate students, I received the award for Best Paper at the Institute of Electrical and

16   Electronics Engineers ("IEEE") Conference on Signals, Systems and Computers. In my role as

17   Deputy Director, I lead a team of faculty and student researchers in developing the first distributed

18   immersive performance system that included streaming architectures for synchronizing multiple

19   high definition and multichannel audio streams.

20   **III.   LEGAL STANDARD**

21   14.   I am not a lawyer, and I do not intend to offer any opinions as to the interpretation of

22   the law. In this section, I describe my understanding of certain legal standards. I have been informed

23   of these legal standards by Google's attorneys. I am relying only on instructions from Google's

24   attorneys for these legal standards. I set forth my understanding below.

25   **A.   Person of Ordinary Skill in the Art ("POSITA")**

26   15.   I understand that claim construction is analyzed from the perspective of a person

27   having ordinary skill in the art. I understand that the person of ordinary skill in the art is a

28   hypothetical person or ordinary creativity, not an automaton. I understand that a person of ordinary

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1   skill, while not someone who undertakes to innovate, is capable of drawing inferences and taking

2   creative steps. I understand that, in determining the level of skill in the art, courts consider the type

3   of problems encountered in the art, prior art solutions to those problems, rapidity with which

4   innovations are made, sophistication of the technology, and the educational level of active workers

5   in the field. I understand that not all of these factors will be relevant in a given case.

6   **B.   Patent Claims and Claim Construction**

7   16.   I understand that a patent may include two types of claims, independent claims and

8   dependent claims, that an independent claim stands alone and includes only the limitations it recites,

9   that a dependent claim can depend from an independent claim or another dependent claim. I

10   understand that a dependent claim includes all the limitations that it recites in addition to all of the

11   limitations recited in the claim from which it depends.

12   17.   I understand that the words of a claim are generally given their ordinary and

13   customary meaning. I understand the ordinary and customary meaning of a claim term is the

14   meaning that the term would have to a person of ordinary skill in the art in question at the time of

15   the invention. I understand that the person of ordinary skill in the art is deemed to read the claim

16   term not only in the context of the particular claim in which the disputed term appears, but in the

17   context of the entire patent, including the specification.

18   18.   I understand there are only two exceptions to the general rule that words of a claim

19   are given their plain and ordinary meaning: first, when a patentee sets out a definition and acts as

20   his own lexicographer; and second, when the patentee disavows the full scope of a claim term either

21   in the specification or during prosecution. I understand that these standards are exacting. I

22   understand that, to act as its own lexicographer, a patentee must clearly set forth a definition of the

23   disputed claim term other than its plain and ordinary meaning and clearly express an intent to

24   redefine the term. I understand that disavowal requires a clear and unmistakable disclaimer. I

25   understand that, absent disavowal or lexicography, it is improper to import limitations into the

26   claims from the patent specification, or to limit the claims to a particular embodiment.

27   19.   I understand that courts may consider extrinsic evidence outside of the patent and its

28   file history, such as dictionaries, scientific treatises, and testimony from experts and inventors.

1 However, I also understand that extrinsic evidence is less significant than the intrinsic record in

2 determining the legally operative meaning of claim language.

3 **IV.   TECHNOLOGY BACKGROUND**

4   **A.   Music or Play Queues**

5   20.   Prior to the alleged invention of the '615 and '033 Patents, devices and applications

6 that streamed music (*e.g.*, Sonos and Spotify) often permitted users to create, edit and manage

7 queues of music. These queues, which were often called "music queues" or "play queues," were a

8 list of the tracks selected by a user for playback. An illustration of one example of a music queue

9 is shown below:

- The "Play Queue" is a list of all tracks currently selected to be played, such as all tracks by a certain artist or in a certain album.

21 Ex. B (https://helpguide.sony.net/ha/ar/v1/en/contents/TP0000165650.html); *see also* Ex. C

22 (http://pansentient.com/2012/04/spotify-preview-for-android-full-hands-on-review/)   (describing

23 Spotify's "play queue"—"you can add a track to the play queue"); Ex. D

24 (https://techcrunch.com/2012/11/15/spotify-browser-review/) ("the Play Queue section, which lets

25 see [sic] what you've got coming next and as well as your listening history").

26   21.   Sonos's products also included the ability for users to create a music queue. For

27 example, in 2011 Sonos published its "Sonos Controller for Mac or PC Product Guide" ("Controller

28 Guide").   Ex.   E

1   (https://usermanual.wiki/m/68573d543093792f80f0cf24ee19dd2053848aeda926943fd52a0306399

2   1ea56.pdf).   Chapter 4 of the Controller Guide explains that a "music queue" is the list of audio

3   tracks that a user has selected and added to the queue for playback:

What is a music queue?

When you make music selections, they are added to a list of tracks called a *music queue*. You can create a different music queue for each zone in your house, or you can create a zone group and play the same music across multiple zones. A play indicator appears to the left of the track currently playing in the music queue. When the current track ends, the next track in the queue starts to play, and play continues down through the list until the queue is completed. When you add selections to a queue, you can choose to play them now, play them next, add them to the end of the queue, or play them now and clear the queue of previous music selections.

Ex. E (Controller Guide) at 4-2.   Indeed, the Controller Guide explains that when a user "make[s] music selections, they are added to a list of tracks called a *music queue*."   Users can create different music queues and after tracks are added to the queue the selected tracks may be played back.

22.   The Controller Guide also includes illustrations of the Controller application and the Sonos music "queue," which I have put a green box around in the image below.   I have also emphasized the icons on the controller that the user may use to manage the queue, including removing a track from the queue (in red), adding a track to the queue (in purple), and saving the queue (in orange).
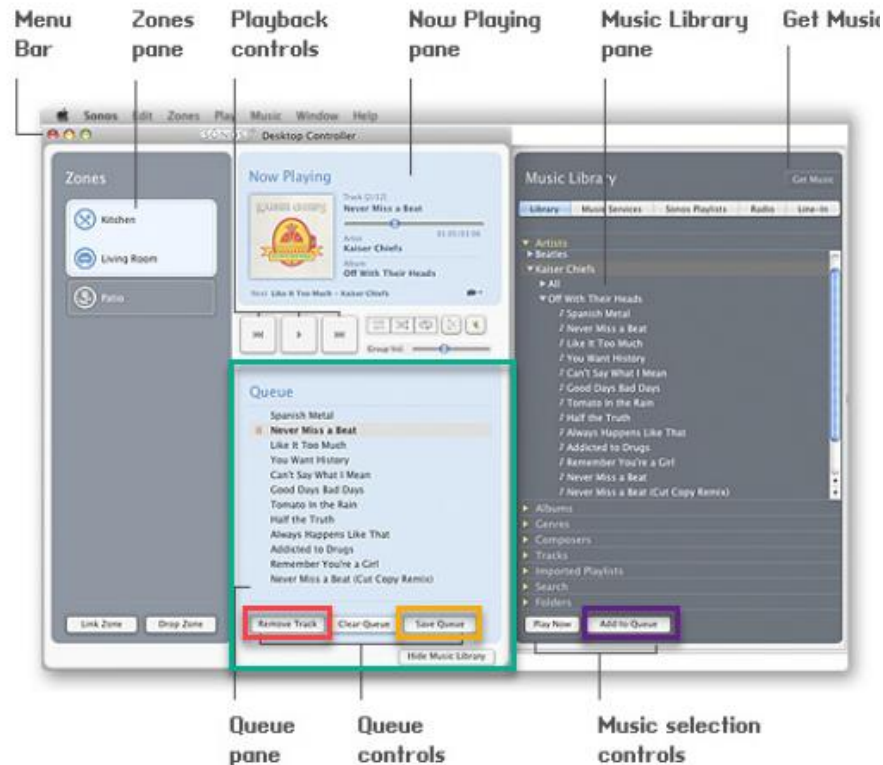
Controller Guide at 5-1. A user can also "drag and drop" audio tracks into the queue. *Id*. at 4-6.

23.   Other prior art streaming services similarly included the ability to create a music queue. For example, the image below shows one example of a Spotify play queue in which a user has selected a number of tracks to be added to the queue.

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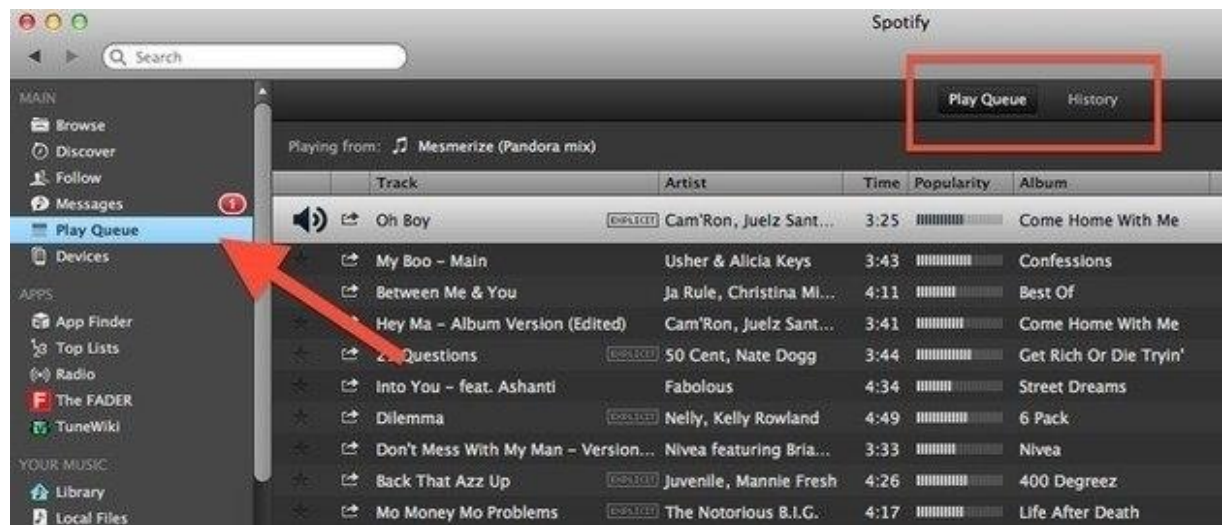
1   24.   The music (or play) queue can be stored in a data structure that is in the memory of

2   the playback device, or it can be stored in a data structure on a cloud server. When the playback

3   queue is stored in the cloud, a local device can fetch one or more tracks within the queue that is

4   stored in the cloud, and the local device then caches this one or more tracks locally to implement

5   playback of the cloud queue.

6   **B.   Locating Internet Resources**

7   25.   An Internet resource is a collection of information that can include various types of

8   content. For example, an audio file that is stored on an Internet server would be one example of an

9   Internet resource.

10   26.   Providing access to these resources requires a method that can be implemented in

11   some form of client software that can interpret the location of the resource and access the content.

12   A standardized system was put together in the very early days of the Internet to achieve this. Every

13   resource on the Internet is assigned a unique string of text that is called a Uniform Resource

14   Identifier (URI). There are different types of URIs, which can be classified as a locator, an identifier,

15   or both.

16   27.   One type of URI is a Uniform Resource Locator (URL). A URI is classified as a

17   URL if, in addition to identifying an internet resource, it also provides a description of the means

18   used to retrieve it (*e.g.*, hyper-text transfer protocol (http) or file transfer protocol (ftp)). For

19   instance, a URL may consist of the following components: http://www.domainname.com/folder-

20   name/web page-file-name.htm. The aim of a URL is to find the location of a resource on the

21   Internet.

22   28.   Another type of URI is a Uniform Resource Name (URN). A URN refers to a

23   resource on the Internet without actually specifying its location. It is simply a unique name, such

24   as an ISBN number that uniquely identifies a book.

25   29.   The foregoing Internet resource items were well known in the art prior to the '615

26   and '033 Patents.

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1 **V.   THE SONOS '615 AND '033 PATENTS**

2   30.   The '615 Patent claims priority through a series of continuation applications to U.S.

3 Application No. 13/341,237, filed on December 30, 2011, and names Tad Coburn and Joni Hoadley

4 as inventors. The '033 Patent is a continuation of the '615 patent and includes essentially the same

5 figures and written description. Because the specifications of these patents are the same, I cite to

6 the disclosures in the '615 patent throughout this declaration, although the same disclosure can also

7 be found in the '033 patent.

8   31.   The specification of the '615 Patent explains that by the time of the alleged invention

9 a user could access various cloud-based streaming services. *See e.g.,* '615 Pat., 1:18-28. (explaining

10 that prior art permits user to "access audio, video, or both audio and video content over the Internet

11 through an online store, an Internet radio station, an online music service, an online movie service,

12 and the like, in addition to the more traditional avenues of accessing audio and video content.").

13 The patent purports to disclose embodiments in which a user may switch playback of streaming

14 content from a computing device or controller (terms used interchangeably in the patent) to a

15 playback device in a local network. *See e.g.,* '615 Pat., 1:10-30, 1:66-20, 3:28-30, 12:44-67, 13:14-

16 22, 13:54-56.

17   32.   Figure 1 of the '615 patent (on the left) illustrates an example system of a local

18   playback network of the '615 patent. As can be

19 seen in Figure 1, one or more playback device or

20 zone players (terms used interchangeably in the

21 patent) are numbered 102-124 and placed

22 throughout the house to form a whole house

23 audio system. *See e.g.,* '615 Patent, 3:17-37.

24 Figure 1 also shows a controller, numbered 130,

25 that can be used to control playback on the

26 playback devices. *Id.* The patent explains that the controller and playback devices can communicate

27 with one another over wired or wireless networks. *Id.*, 1:65-2:9.

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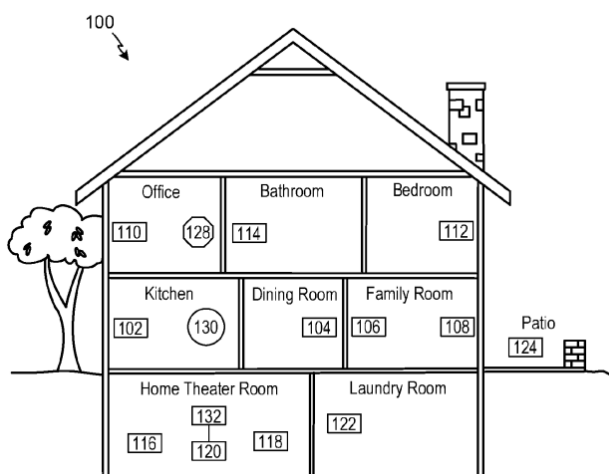
33.   Figure 3 of the '615 patent (on the right) illustrates an example of a "computing device," such as computing device 130 that is shown in Figure 1. The computing device provides a graphical user interface (GUI) for "navigat[ing] a playlist of multimedia items and control[ing] operations of one or more [playback devices]." *See e.g.,* '615 Pat., 3:30-33, 9:10-48, 11:42-44. The patent also discloses that an application running on a network-enabled device, such as a "smart phone" can be used as a controller. *Id*., 4:64-5:11. The patent discloses that "a user can queue up music" using the controller or application running thereon and then play the music that is in the queue on the local playback system. *Id*., 17:12-20, 12:44-61, 13:22-30.
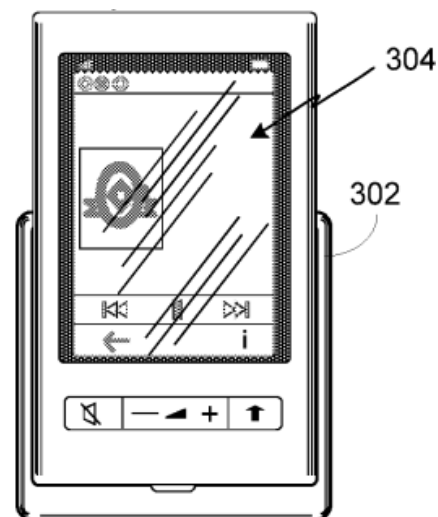
34.   A local playback network includes playback devices and a computing device that may be connected to a non-local media source, such as the "cloud." *Id*., 12:8-67, Fig. 7. This allows either type of device to fetch content from a third-party service. *Id*.

35.   When a playback device is configured for playback of content, it can retrieve media from the cloud. In particular, the patent explains that "[a] uniform resource indicator (URI) (e.g., a uniform resource locator (URL)) can be passed to a playback device to fetch content from a cloud and/or other networked source, for example." '615 Pat., 12:53-56. The patent further teaches that the URI can be a "uniform resource locator (URL)" which the patent explains "specifies an address to particular [content] in the cloud." *Id*., 1:19-29, 11:62-12:3, 12:53 (noting that a uniform resource locator (URL) is an example of a URI), 13:14-22, 13:54-56. While the patent discloses song identifiers may also be used in the process, it does not refer to them as "resource locators." *Id*., 12:58-61 ("Once the zone player has a URL (or some other identification or address) for a song and/or playlist, the zone player can run on its own to fetch the content."), 13:31-33 ("certain embodiments provide cross-service linking such that a song identifier can be passed from one user and/or service to another to be fetched and played."). *Id*., 12:58-61. In fact, the claims distinguish between a "resource locator" and song "identifier". *Compare* Claim 13 (reciting "adding, to the local playback queue, one or more resource locators") *with* Claim 20 ("causing an identifier of the

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1   multimedia content to be added to the local playback queue"). Thus, the specification teaches that

2   a playback queue may store uniform resource locators and identifiers for the ordered list of

3   multimedia items that are in the queue, and then use them for playback.

4   **VI.   LEVEL OF ORDINARY SKILL IN THE ART**

5   36.   I understand that the '615 and '033 Patents are each continuations, sharing

6   substantively the same specification and all claiming priority to a single provisional application filed

7   on Dec. 30, 2011 and that Sonos contends the '615 and '033 Patents are entitled to an effective filing

8   date of Dec. 30, 2011, and a July 15, 2011 invention date. For purposes of this declaration only, I

9   have assumed that the asserted claims of the '615 and '033 Patents are entitled to the alleged

10   invention date Sonos has proposed.

11   37.   In my opinion, a person of ordinary skill in the art at this time would have had a

12   bachelor's of science in electrical engineering, computer science or engineering, or a related field,

13   and two to four years of work or research experience in the field of information networks, data

14   communications, or multimedia systems, or a Master's degree and one to two years of experience

15   in the same field.

16   38.   My determination of the appropriate level of skill is based on my review of the

17   asserted patents, the type of problems encountered in the art, prior art solutions to those problems,

18   the sophistication of the technology, and the educational level of active workers in the field.

19   39.   I have set forth in Section IV above the general subject matter of the asserted patents.

20   40.   I meet the above criteria for a POSITA and consider myself a person with at least

21   ordinary skill in the art pertaining to the asserted patents. I would have been such a person at the

22   time of the alleged invention of each of the Asserted Patents. I am qualified to provide opinions

23   concerning what a POSITA would have known and understood at that time, and my analysis and

24   conclusions in this declaration are from the perspective of a POSITA at least as of the alleged date

25   of invention of the asserted patents.

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VII.   ANALYSIS

41.   I have been asked to provide my opinion on specific terms that appear in the '615 Patent and '033 Patent, namely the terms "playback queue" and "resource locator." I understand that the following claims of these patents are asserted in this lawsuit:

Patent	Asserted Claims
'615 Patent	13, 14, 15, 18, 19, 20, 21, 25, 26
'033 Patent	1, 2, 4, 9, 11, 12, 13, 16

42.   I have been asked to provide my opinions as to the proper constructions of the terms "playback queue" and "resource locator" in the asserted claims based on the claim construction principles articulated above. My opinions are set forth below.

VIII.   CLAIM TERMS

A.   "playback queue" ['615 Patent And '033 Patent, All Asserted Claims]

Sonos Construction	Google Construction
Plain and ordinary meaning, no construction necessary	an ordered list of multimedia items that is selected by the user for playback

43.   I have been asked to opine on the term "playback queue" as recited in the claims of the '615 Patent and '033 Patent.

44.   The term "playback queue" appears in each of the independent claims of the '615 patent as part of the larger phrase "local playback queue on the particular playback device." For example, Claim 13 of the '615 Patent reads, in pertinent part: "(a) causing one or more first cloud servers to add multimedia content to a local playback queue on the particular playback device, wherein adding the multimedia content to the local playback queue comprises the one or more first cloud servers adding, to the local playback queue, one or more resource locators corresponding to respective locations of the multimedia content at one or more second cloud servers of a streaming content service." Independent claim 25 includes identical language, and dependent claims 20-21 refer back to the "the local playback queue on the particular playback device" of Claim 13.

45.   The term also appears in each of the independent claims of the '033 Patent as part of the larger phrase "remote playback queue." For example, Claim 1 recites "operating in a first mode in which the computing device is configured for playback of a remote playback queue provided by a cloud-based computing system associated with a cloud-based media service."

46.   It is my opinion that Google's proposed construction of "playback queue" is consistent with the ordinary and customary meaning to a person of ordinary skill in the art at the time of the alleged invention, as supported by the intrinsic evidence (*e.g.*, claims and specification) and the extrinsic evidence. In contrast, Sonos proposes a "plain and ordinary meaning" construction, but does not articulate what it believes is the plain and ordinary meaning of the "playback queue" or how it differs from Google's proposed construction.

47.   To the person of ordinary skill in the art, the word "playback queue," as recited in the claims, has an ordinary and customary meaning in the context of multimedia playback applications and devices. More particularly, a person of skill in the art would have understood that a "playback queue" is an "ordered list of multimedia items that is selected by the user for playback." Google's proposal thus tracks the ordinary and customary meaning that a person of ordinary skill in the art would attribute to the term

48.   Google's proposal also aligns with the '615 Patent description of the playback queue. For instance, the specification of the '615 Patent indicates that "[c]ertain embodiments provide queue management to allow a third party application to control a local playback queue. That is, the local playback system has a queue, but the third party application allows users to add, delete and so on from the queue, for example." '615 Patent, 16:53-57. Because users can edit, and change the order of items in the queue, the queue must be ordered. This is further confirmed because the specification indicates that the local playback system, in turn, can "pass information back to a third party application to indicate a current point of playback (*e.g.*, now playing a third song in a playlist, fourth song in the playlist, and so on)," and similarly the playback system can be instructed to "skip a song, go to a certain location, and so on." '615 Patent, 16:32-42. In order for the playback system to pass information regarding which song (third, fourth, etc.) is being played, and in order for the playback system to "skip" a song, the local playback queue on the playback system must be an

1   ordered list of multimedia items for playback in the listed order. The specification also explains

2   that "a user can queue up music," confirming that the multimedia items are selected for addition to

3   the queue by the user.

4   49.   The ordinary and customary meaning of the term "playback queue" is also reflected

5   in Sonos's own documents and patent applications, as well as other industry materials.

6   50.   For example, Sonos's own products and manuals are consistent with Google's

7   construction of the term "playback queue."   I

8   explained in Section IV above that Sonos's manuals

9   from the relevant time-frame describe a playback

10 queue (*e.g.*, a "play queue" or a "music queue") as a

11 "list of tracks" that is created via "music selection" by

12 the user. Controller Guide at 4-2. The user creates a

13 queue by selecting tracks to add to the queue and can

14 then save and playback the queue items. The

15 selection of media items in the queue can be edited by

16 the user too, with items added or removed. The image

17 in this paragraph (which I discussed in greater detail above) illustrates one example of a Sonos

18 playback queue, and can be seen to have an ordered list of media items (audio tracks) selected by

19 the user for playback.

20   51.   Other industry materials provide a similar description of a playback queue. For

21 example, the manual Windows Vista: The Missing Manual (Ex. F) (http://ommolketab.ir/aaf-

22 lib/rvqoaxtga1fs5s4zq306nr6bn81n8f.pdf) explains that the "music queue" is a "waiting line" with

23 "the list of songs you've lined up to play in Media Center." *Id*. at Section 16.4.7. Similarly, Sony

24 explains that "[t]he 'Play Queue' is a list of all tracks currently selected to be played." Ex. B

25 (https://helpguide.sony.net/ha/ar/v1/en/contents/TP0000165650.html.)   In   my   opinion,   the

26 descriptions provided by these Sonos manuals and these industry materials reflect how a person of

27 ordinary skill would ordinarily and customarily understand the term "playback queue," namely as

28 an ordered list of multimedia items that is selected by the user for playback.

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52.   Further, a person of skill in the art would understand that queues are stored in data structures, for example by linking together different media items in a particular order using linked lists, arrays, vectors, or other well-known data structures.   It is important to note that where a queue is maintained in the cloud, remote from the client device, the client device may choose to retrieve and buffer (or cache) a few items from the queue stored in the cloud in order to optimize playback. Persons of skill in the art would recognize that these buffered items serve a very different purpose from a queue and are not the queue themselves. Buffers can be used to quickly cache information such that access to it is more immediate than to a resource in a more remote portion of the storage hierarchy. Queues, in contrast, are created to organize and store (in this context) media items for playback. These are distinct concepts and a person of skill in the art would not confuse or conflate them.

53.   In my opinion, construing queue to include an ordered list of multimedia items that is selected by the user for playback is consistent with my understanding of any "queue," because as I explained above in relation to my experience with a number of speaker systems, users can add or remove items from the queue. This is also consistent with the function of a queue, to provide songs for playback one after another, which implies some sort of order.

54.   In my opinion, the '615 and '033 Patents, the intrinsic record, and the general knowledge or skill in the art would lead a POSITA to understand this term to mean an ordered list of multimedia items that is selected by the user for playback.

B.   "resource locator" ['615 Patent, Claims 13, 16, 25]

Sonos Construction	Google Construction
Plain and ordinary meaning; no construction necessary	address of a resource on the Internet

55.   I have been asked to opine on the term "resource locators" as recited in the claims of the '615 Patent.

56.   I agree with Google's proposed construction that the term "resource locator" means "address of a resource on the Internet" based on how a POSITA would understand the term in view

1 of the intrinsic and extrinsic record. In contrast, Sonos proposes a "plain and ordinary meaning"

2 construction, but does not articulate what it believes is the plain and ordinary meaning of the term

3 "resource locator" or how it differs from Google's proposed construction.

4   57.   Initially, while Sonos proposes "plain and ordinary meaning," a POSITA would

5 recognize that the term "resource locator" by itself does not have a universal meaning in the art. Its

6 meaning can differ depending on the context in which the terms is used. Indeed, I understand that

7 as part of the claim construction process Sonos disclosed its intrinsic and extrinsic evidence in its

8 "Patent Local Rule 4-2" disclosures. I have reviewed the extrinsic evidence that Sonos cites for

9 support in these disclosures and note that Sonos did not provide any dictionary or textbook that

10 provide a definition for the term "resource locators." I have also searched Merriam-Webster's

11 dictionary for a definition of "resource locator." When searching for the term "resource locator" in

12 the online version of the Merriam-Webster dictionary the result that the Merriam-Webster dictionary

13 returns is the term "URL," which the dictionary defines, in relevant part, as "the address of a

14 resource (such as document or website) on the Internet":

15

16

17

""resource locator""

The following **2 entries** include the term *"resource locator"*.

uniform resource locator

<u>noun</u>

: <u>url</u>

See the full definition

universal resource locator

<u>noun</u>

: <u>url</u>

See the full definition

Definition of *URL*

: the address of a resource (such as a document or website) on the Internet that consists of a communications protocol followed by the name or address of a computer on the network and that often includes additional locating information (such as directory and file names) our site's URL is http://www.Merriam-Webster.com

— called also uniform resource locator, universal resource locator

21 Ex.   G   (https://www.merriam-webster.com/dictionary/%22resource%20locator%22.)   Other

22 technical dictionaries I have reviewed, for example, the Microsoft Computer Dictionary, Fifth

23 Edition (2002) similarly include a definition for the term "resource locator" only as part of the larger

24 phrase "universal resource locator" or URL. (Ex. H, GOOG-SONOSNDCA-00056878 at 83)

25 Indeed, in my experience the term "resource locator" is often used in the art as shorthand for the

26 phrase "Uniform Resource Locator" or URL.

27   58.   Additionally, in my opinion the plain language of the claims supports Google's

28 construction. For example, the term "locator" in the word "resource locator" indicates to a person

1   of skill in the art that the "resource locator" provides a location for the resource. As I explained

2   earlier, the locations of resources on the Internet are given by addresses, such as a URL. Further,

3   the claim language explicitly states that "resource locators correspond[] to respective locations of

4   the multimedia content at one or more second cloud servers." For example, Claim 13 of the '615

5   Patent reads, in pertinent part: "one or more first cloud servers adding, to the local playback queue,

6   one or more resource locators corresponding to respective locations of the multimedia content at

7   one or more second cloud servers of a streaming content service." Independent claim 25 includes

8   identical language, and dependent claim 16 also recites "a particular source indicated by a resource

9   locator," consistent with Claim 13.

10   59.   By specifying that the resource locators correspond to respective locations of the

11 multimedia content at the cloud server, the claim language indicates to a POSITA that the resource

12 locators are an address for a resource (which in this case is the "multimedia content") on the Internet.

13 Indeed, an address describes a location, and in this case the claims specify that the location is to

14 content on a "cloud server," which, by its very nature, is a server accessed over the Internet. A

15 POSITA would understand that the location of a resource on the Internet (such as the multimedia

16 content on the cloud servers) are given by a Uniform Resource Locator. *See e.g.,* Microsoft

17 Computer Dictionary, Fifth Edition (2002) (defining URL as "[a]n address for a resource on the

18 Internet. URLs are used by Web browsers to locate Internet resources."). (Ex. H, GOOG-

19 SONOSNDCA-00056878 at 83) Indeed, in order for a resource locator to be used to fetch content

20 from a cloud, the resource locator must contain an address in the cloud, *e.g.*, the address of the

21 particular track being requested.

22   60.   In addition to aligning with the claim language, Google's proposed construction is

23 also supported by the disclosures in the '615 Patent specification.

24   61.   The term "resource locator" appears in the '615 Patent specification only as part of

25 the larger phrase "uniform resource locator (URL)," which the patent describes as "specif[ying] an

26 address" to an audio track in the cloud. '615 Patent, 11:65-12:3 ("For example, zone player **602** may

27 contain a uniform resource locator (URL) that specifies an address to a particular audio track in the

28 cloud. Using the URL, the zone player **602** may retrieve the audio track from the cloud, and

1 ultimately play the audio out of one or more zone players."), 12:53-56 ("A uniform resource

2 indicator (URI) (e.g., a uniform resource locator (URL)) can be passed to a playback device to fetch

3 content from a cloud and/or other networked source, for example."). In fact, the patent distinguishes

4 between a resource locator, and a mere identifier. *Id.*, 12:57-61 ("Once the zone player has a URL

5 (or some other identification or address) for a song and/or playlist, the zone player can run on its

6 own to fetch the content."), 13:31-33 ("certain embodiments provide cross-service linking such that

7 a song identifier can be passed from one user and/or service to another to be fetched and

8 played."). *Id.*, 12:58-61. The claim language also distinguishes a "resource locator" from a mere

9 "identifier" of a multimedia item. *Compare* Claim 13 (reciting "adding, to the local playback queue,

10 one or more resource locators") *with* Claim 20 ("causing an identifier of the multimedia content to

11 be added to the local playback queue"). I have reviewed the '615 Patent specification and have not

12 identified any disclosure in which the term "resource locator" is used in connection with anything

13 other than an address of a resource on the Internet.

14   62.   Additionally, as I previously explained, the claims recite that the "resource locator"

15 corresponds to "respective locations of the multimedia content at one or more second cloud servers."

16 I have reviewed the specification and confirmed that a URL is the only disclosure in the patent that

17 corresponds to respective locations of multimedia content at the cloud servers. For example, the

18 '615 Patent discloses that the playback devices may be provided an identifier or URL to "fetch

19 content" from a cloud, of which only the URL corresponds to a location of content on the cloud

20 server. *See e.g.* '615 Patent, 12:53-63 ("A uniform resource indicator (URI) (e.g., a uniform

21 resource locator (URL)) can be passed to a playback device to fetch content from a cloud and/or

22 other networked source, for example. A playback device, such as a zone player, can fetch content

23 on its own without use of a controller, for example. Once the zone player has a URL (or some other

24 identification or address) for a song and/or playlist, the zone player can run on its own to fetch the

25 content. Songs and/or other multimedia content can be retrieved from the Internet rather than a local

26 device (e.g., a compact disc (CD)), for example."). The '615 Patent also discloses a URL being

27 used to "point back" to a webserver, which indicates a location or address of the resource on the

28 webserver. *See e.g.* '615 Patent, 15:37-46 ("In certain embodiments, instead of using a specialized

1   link, such as a "sonos:" link, a normal URL can be used to point to a playback system (e.g., Sonos™)

2   webserver, which generates links with special data embedded in the link. A playback system is

3   identified, and content identified by the URL can be playing via the local playback network (e.g.,

4   mesh network configured for home, hotel room, etc.). Parameters such as authentication, security,

5   location, and so on can be configured for local playback of remote content").

6   63.   The extrinsic evidence further supports that a "resource locator" is an "address of a

7   resource on the internet." For example, as I previously explained, I have seen no dictionary or

8   textbook dictionary from Sonos that defines the term "resource locator." Instead, the term "resource

9   locator" appears in dictionaries as part of the larger phrase "uniform resource locator." For example,

10 the Microsoft Computer Dictionary, Fifth Edition (2002) defines a URL as "[a]n address for a

11 resource on the Internet" and notes that "URLs are used by Web browsers to locate Internet

12 resources." (Ex. H, GOOG-SONOSNDCA-00056878 at 83) Similarly, *A Dictionary of Computing*,

13 6th Edition (2008) defines a URL as "[t]he address system used on the Internet, for example, to

14 specify the location of documents in the *World Wide Web." (Ex. I, GOOG-SONOSNDCA-

15 00056884 at 90) Finally, the *Wiley Electrical and Electronic Engineering Dictionary*, IEEE press,

16 2004 defines URL as "[a]n Internet address which directs a browser to a specific location where an

17 Internet resource, such as a Web page or document, is located." (Ex. J, GOOG-SONOSNDCA-

18 00056891 at 95) All of these support my understanding that a "resource locator" is the address of a

19 resource on the Internet.

20   64.   I have also reviewed the intrinsic and extrinsic evidence that Sonos has cited in its

21 "Patent Local Rule 4-2" disclosures. In my opinion, these disclosures do not support Sonos's

22 position.

23   65.   Sonos cites to the following disclosures in the '615 Patent: '615 Patent, 2:51-3:13,

24 11:62-12:3, 12:38-63, 13:31-40, 14:29-61, 15:12-16, 15:41-46, 15:51-67, 16:9-19, FIGs. 7, 9, 11.

25 But, as I already explained, the only use of the term "resource locator" in these sections (and the

26 entirety of the patent for that matter) is in the context of a "uniform resource locator (URL)," which

27 is an address that specifies the location of a resource on the Internet, consistent with Google's

28 proposed construction. The URL is also the only item in these portions of the '615 patent that would

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1 correspond to "respective locations of the multimedia content at one or more second cloud servers

2 of a streaming content service," which the claims explain is a property the "resource locator" must

3 have.

4   66.   Sonos also cites to the following portions of the prosecution history: (1) '615

5 Prosecution History, April 5, 2017 Office Action Response; (2) '615 Prosecution History, May 9,

6 2017 Office Action; and (3) '615 Prosecution History, August 28, 2017 Office Action Response. It

7 is unclear why Sonos believes these disclosures support its position. To the contrary, the disclosures

8 are consistent with Google's position. For instance, in the May 9, 2017 Office Action, the Examiner

9 equated the claimed "resource locators" with "resource addresses," explaining that the prior art

10 discloses adding to the local playback queue "one or more resource addresses corresponding to

11 respective locations of the multimedia content at one or more second cloud servers of a streaming

12 content service." May 9,-2017 Office Action at 5. The Examiner also referred to Zott's disclosure

13 of URLs as "resource locators." *Id*. Moreover, when Sonos filed its August 28, 2017 Office Action

14 Response Sonos did not dispute that URLs in the prior art were resource locators. Thus, I do not

15 agree with Sonos that the prosecution history supports its construction.

16   67.   In its Patent Local Rule 4-2 disclosures, Sonos cites to four patents in support of its

17 proposed construction. In my opinion, these references do not support Sonos's construction.

18   68.   For instance, Sonos cites to U.S. Patent No. 8,386,495 ("the '495 patent") that is

19 titled "Augmented Resource Graph For Scoring Resources." Initially, this reference does not relate

20 to the field of streaming media, but rather search engines which may determine "a query-

21 independent score for a resource using a web resource graph having nodes corresponding to

22 resources and edges corresponding to links between resources." Sonos points to column 3, lines 17

23 to 38 of this patent. It is unclear why Sonos believes this patent supports its position. In my opinion

24 it does not—it supports Google's position. Indeed, the patent states that "[e]ach resource is

25 addressed by a resource locator, such as a universal resource locator (URL)." *Id*. at 3:24-29. The

26 following sentence then elaborates that "[a] resource locator is a string of characters that identifies

27 a resource *and provides means for locating the resource*." *Id*. Thus, the patent explains that a

28 resource locator is not simply an identifier of a resource, but must additionally specify the location

of the resource. *Id*. The next sentence in the '495 patent also confirms this by explaining that the resource locator may include a "host name and path of the resource." *Id*. A person of skill in the art would understand that where the resource is on the Internet, a means for locating the resource or a path of the resource refers to an address to the resource, consistent with Google's construction.

69.   Sonos next cites to column 5, lines 16 to 27 of U.S. Patent No. 8,032,612 ("the '612 patent") titled "Token-Based Web Browsing With Visual Feedback Of Disclosure." Again, the subject matter of the '612 patent and the asserted Sonos patents in this case are different because the '612 patent is directed to browsing a communications network by using tokens and key word searches. *Id*. at Abstract. In any event, the specification of the '612 Patent generally discloses that a resource locator is provided through a hyperlink (e.g., "special rendering of a hyperlink corresponding to the resource locator"), which suggest that the patent's use of the term "resource locator" is not so broad as Sonos suggests, and is instead consistent with Google's proposed construction of an address of a resource on the internet. *E.g.*, '612 Pat. at Abstract (same); 2:13-16; 3:11-61; 8:29-9:9; 9:21-35. Even if the '612 Patent did support Sonos's position, however, the portion of the '612 patent that Sonos cites expressly states that its discussion of "resource locator" is unique to the '612 patent: "***In the context of the present invention***, the term 'resource locator' or 'RL' is defined as an identifier used for accessing a resource." *Id*., 5:16-27 (emphasis added). Reading this limited portion of the '612 Patent disclosure broadly (and divorced from the context discussed above), would be inconsistent with the '615 patent. Indeed, the '615 patent claims expressly distinguish the "resource locator" from an "identifier" used to access the media. Compare Claim 13 (reciting "adding, to the local playback queue, one or more resource locators…") with Claim 20 (depending on Claim 13 and further reciting "causing an identifier of the multimedia content to be added to the local playback queue."). Moreover, the claims also explain that the "resource locator" corresponds to a "location" of the multimedia content at the cloud server. A person of ordinary skill in the art would understand that an identifier of media content does not identify a location of multimedia content at a cloud server. A location for the media item on the cloud server necessitates an address, such as a URL.

70.   Sonos also cites to paragraph 27 of U.S. Patent Publication No. 2010/0235469, titled "Method and System for Providing Access to Resources Related to a Locatable Resource." This citation does not support Sonos's construction. In using the term "resource locator" it expressly states that the resource locator is "for locating a resource." *Id*. The cited paragraph describes only a single type of resource locator, namely a "URL," which I have already explained is consistent with Google's proposed construction because it specifies an address to an Internet resource. *Id*. The paragraph also states that the resource locator "serves a locator by identifying a network path to" the resource (*i.e.*, an address to the resource).

71.   Finally, Sonos cites to column 3 line 32 to 37 of U.S. Patent No. 8,533,469, titled "Method and Apparatus for Sharing Documents." The cited disclosure states that a "resource locator may be a reference associated with the electronic document that would allow user 106 to locate or request access to the electronic document," and goes on to describe the resource locator as a "URL." *Id*. This disclosure is thus entirely consistent with Google's construction.

72.   In my opinion, the '615 Patent, the intrinsic record, and the general knowledge or skill in the art would lead a POSITA to understand this term "resource locator" to mean an address of a resource on the Internet .

73.   I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct and that this declaration was executed this February 11, 2022 in Los Angeles, CA.

_____

Dr. Christos Kyriakakis

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